

REMARKS

Claims 1, 5, 9, 11, 24, 41, 44, 50, 53, 54 and 59 are amended. Claims 25, 29-40, 45 and 49 are cancelled. Claims 60-67 are added. Claims 1-24, 26-28, 41-44, 46-48 and 50-67 are pending in the application.

In response to the Examiner's request for restriction, applicant hereby affirms the provisional election without traverse entered on March 18, 2003 to prosecute the invention of Group I (claims 1-28 and 41-59). Claims 29-40 are appropriately cancelled.

The drawings stand objected to under 37 CFR 1.83(a) as not showing every element of the claims. The examiner indicates that the slotted tube as recited in claim 59 is not shown in any figure. Without admission as to the propriety of the examiners objection, claim 59 is amended to no longer recite "slotted tube". Accordingly, applicant respectfully requests withdrawal of the objection to the drawings in the Examiner's next action.

Claims 5 and 53 stand objected to based on informalities. Each of claims 5 and 53 are amended to incorporate the typographical changes suggested by the Examiner. Accordingly, applicant respectfully requests withdrawal of the objection to claims 5 and 53 in the Examiner's next action.

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the recited "the annular space" and "the casing" lack antecedent basis. As amended, claim 5 depends from claim 4 which provides proper antecedent basis for the recited features. Accordingly, applicant respectfully requests withdrawal of the § 112 rejection of claim 5 in the Examiner's next action.

Claims 1-5 and 7-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Means,

U.S. Patent No. 3,489,218 and/or as being anticipated by McDougall, U.S. Patent No. 4,670,166, or in the case of claim 2, as being anticipated by or rendered obvious by either of Means or McDougall.

The Examiner is reminded by direction to MPEP § 2131 that anticipation requires each and every element of a claim to be disclosed in a single prior art reference. The Examiner is further reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 1-5 and 7-8 are allowable over Means and over McDougall for at least the reason that the references fail to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 1 recites a method of inhibiting microbial growth in a well comprising coating a first material with an antimicrobial agent to form a packing material, and filling at least a portion of the well bore with the packing material. The amendment to claim 1 is supported by the specification at, for example, page 5, paragraph 17. Means discloses introducing radioactive material into a well bore either within a portable container or mixed with aqueous cement (Examples 2 and 3). Means does not disclose the claim 1 recited coating a first material with an antimicrobial agent to form a packing material. Further, Means does not suggest this recited feature and independent claim 1 is not rendered obvious by this reference.

McDougall discloses forming solid polymeric bodies containing a reagent and providing the solid polymeric bodies into a water containing region of a formation (col. 4, ll. 17-30 and col. 2, ll. 48-68). McDougall does not disclose the claim 1 recited coating a first material with an antimicrobial agent to form a packing material and filling at least a portion of the well bore with the packing material. Further, McDougall does not suggest these recited features and independent claim

1 is not rendered obvious by this reference.

Dependent claims 2-5 and 7-8 are allowable over each of Means and McDougall for at least the reason that they depend from allowable base claim 1.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Means in view of Roser, U.S. Patent No. 5,099,917. As indicated above, independent claim 1 is not anticipated by or rendered obvious by Means. Roser discloses a water well construction having a plastic well casing 10, having a plastic pipe 18 for drawing water from the well and having a plastic pipe 30 to allow access to water in the well for water treatment purposes (col. 5, ll. 42-50). Roser further discloses providing washed stones 16 within the well bore to support casing 10 (col. 5, ll. 10-21). As combined with Means, Roser contributes nothing towards suggesting the independent claim 1 recited coating a first material with an antimicrobial agent to form a packing material and filling at least a portion of the well bore with the packing material. Accordingly, independent claim 1 is not rendered obvious by the cited combination of Means and Roser and is allowable over these references. Dependent claim 6 is allowable over the cited combination of Means and Roser for at least the reason that it depends from allowable base claim 1.

Claims 9-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Roser, or under 35 U.S.C. § 103(a) as being unpatentable over Roser as combined with one or more of Means; Howard, U.S. Patent No. 3,202,213; Crow, U.S. Patent No. 3,566,970; and Morine, U.S. Patent No. 3,547,194. As amended, independent claim 9 recites a method of inhibiting microbial growth in a well having a well bore that extends from a ground surface only partially through the vadose-zone. Claim 9 additionally recites supplying an antimicrobial material into the well through at least one access tube which is provided within the well bore and externally to a well casing. The amendment to claim 9 incorporates the subject matter of claims 25 and 11 and is further supported by the

specification at, for example, page 7, paragraph 23. Roser discloses a well having a bore 14 which extends well below the water level, and having an access pipe 30 which has a hole 35 drilled through the pipe to allow water to flow through and dissolve material within the pipe (Fig. 5 and col. 5, ll. 3-5 and ll. 50-58). Roser does not disclose or suggest the claim 9 recited well bore having a depth extending only partially through the vadose-zone. Further, Roser does not disclose or suggest the claim 9 recited inhibiting microbial growth in a well having a bore extending only partially through the vadose zone by supplying antimicrobial material through at least one access tube.

Howard discloses a method of cementing large diameter casings of oil wells by providing a plurality of conduits 23 through a well casing 12 (internally), the conduits being connected to a cement shoe 14 at the lower end of the casing (col. 3, ll. 50 through col. 4, ll. 9 and Fig. 1). Howard does not disclose or suggest the claim 9 recited well bore having a depth extending from a ground surface only partially through the vadose zone and providing at least one access tube within the well bore external to the casing. Nor does Howard disclose or suggest the recited supplying an antimicrobial material into a vadose-zone well through the at least one access tube. As combined, the water well construction disclosed by Roser having an access pipe which water flows through and the oil well cement conduits provided internally to an oil well casing as disclosed in Howard do not disclose or suggest the claim 9 recited supplying antimicrobial material into a well having a well bore extending partially through the vadose zone. Accordingly, independent claim 9 is not rendered obvious by the combination of Howard and Roser.

As indicated by the Examiner at page 10 of the present Action, Morine was cited to show pumping a liquid copper sulfate agent. As indicated by the Examiner at page 11 of the present Action, Crow was cited to show utilization of a pressurized gas. As indicated at page 12 of the present Action, Means is cited to show a cement antimicrobial mixture. As combined with Roser

and Howard, not one of Means, Crow or Morine contributes in any way towards suggesting the claim 9 recited well bore having a depth extending from a ground surface only partially through the vadose-zone and supplying antimicrobial into the well through at least one access tube disposed externally to a casing. Accordingly, independent claim 9 is not rendered obvious by the various cited combinations of Roser, Howard, Crow, Means and Morine and is allowable over these references.

Claim 11 is amended to properly depend from claim 9. Claim 25 is cancelled. Dependent claims 10-23 and 26-28 are allowable over the various cited combinations of Roser, Howard, Crow, Means and Morine for at least the reason that they depend from allowable base claim 9.

With respect to claim 24, as amended such is placed in independent form and recites inhibiting microbial growth in a well having a well bore that extends into the saturated-zone. Claim 24 additionally recites supplying a powder and/or a granular antimicrobial agent into the well through at least one access tube disposed within the well bore external to the well casing. The amendment to claim 24 is supported by the specification at, for example, page 10, paragraph 31 and pages 4-5, paragraph 16. None of the various cited combinations of Roser, Howard, Crow, Means and Morine suggest the claim 24 recited supplying a powder and/or granular antimicrobial agent into a well through at least one access tube located within the well bore externally to the casing. Accordingly, independent claim 24 is not rendered obvious by Moser, Howard, Crow, Means and Morine and is allowable over these references.

Claims 41-43 stand rejected under 35 U.S.C. § 103(a) as being obvious over Means or as being obvious over McDougall. As amended, independent claim 41 recites a well having a layer of packing material which comprises a mixture including gravel and from 0.5% to about 30 % antimicrobial agent by volume. Neither Means nor McDougall discloses or suggests the claim 41 recited packing material having a mixture of gravel and antimicrobial agent. Further, neither Means

nor McDougall discloses or suggests the claim 41 recited mixture of gravel and from 0.5% to about 30% antimicrobial agent. Accordingly, independent claim 41 is not rendered obvious by either Means or McDougall and is allowable over these references.

Dependent claims 42 and 43 are allowable over each of Means and McDougall for at least the reason that they depend from allowable base claim 41.

Claims 44-53 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Roser or under 35 U.S.C. § 103(a) as being unpatentable over one or more of Roser, Howard, Morine and Means. As amended, independent claim 44 recites a well comprising an uncased well bore with one or more access tubes and an antimicrobial agent within the well bore which is added through the access tubes. The amendment to claim 44 is supported by the specification at, for example, paragraph 26 and paragraph 24. Not one of Roser, Howard, Morine and Means discloses or suggests the claim 44 recited one or more access tubes within an uncased well bore. As combined, Roser, Howard, Morine and Means fail to disclose or suggest the claim 44 recited antimicrobial agent within an uncased well bore added through one or more access tubes within the uncased well bore. Accordingly, independent claim 44 is not rendered obvious by the various cited combinations of Roser, Howard, Morine and Means and is allowable over these references.

Claims 45 and 49 are cancelled. Claim 50 is amended to properly depend from claim 44. Dependent claims 46-48 and 50-53 are allowable over the various cited combinations of Roser, Howard, Morine and Means for at least the reason that they depend from allowable base claim 44.

Claims 54-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over various cited combinations of Roser, Howard, Means, Morine and Crow. As amended, independent claim 54 recites a well having multiple access tubes within a well bore and externally encircling a well casing. Claim 54 additionally recites a layer of packing material comprising a first microbial agent and one

or both of sand and gravel, and a second antimicrobial agent within the access tubes. The amendment to claim 54 is supported by the specification at, for example, Fig. 1; paragraph 26; paragraph 27; and the claims as originally filed. Roser discloses a single access tube located externally to a well casing. Roser does not disclose or suggest the claim 54 recited multiple access tubes externally encircling a well casing or the claim 54 recited second antimicrobial agent within the multiple access tubes in combination with a first packing material containing sand and/or gravel and a first antimicrobial agent. Not one of Howard, Means, Morine and Crow disclose or suggest the claim 54 recited multiple access tubes externally encircling a well casing. Further, not one of Howard, Means, Morine and Crow discloses or suggests the claim 54 recited second antimicrobial agent within the multiple access tubes.

The combined disclosures of Roser, Howard, Means, Morine and Crow fail to disclose or suggest the claim 54 recited multiple access tubes externally encircling a well casing and having a second antimicrobial agent within the access tubes. As combined these references also fail to suggest the claim 54 recited combination of a second antimicrobial agent within multiple access tubes and a first antimicrobial agent mixed with one or both of sand and gravel to form a packing material within the well bore. Further, nothing in the combined disclosures of Means, Howard, Roser, Morine and Crow provides a motivation for the claim 54 recited combination of a second antimicrobial agent within multiple access tubes and a first antimicrobial agent within a layer of packing material. Accordingly, independent claim 54 is not rendered obvious by the cited combinations of Roser, Howard, Means, Morine and Crow and is allowable over these references.

Dependent claims 55-58 are allowable over the various cited combinations of Roser, Howard, Means, Morine and Crow for at least the reason that they depend from allowable base claim 54. Applicant acknowledges the Examiner's indication of allowability of the subject matter of dependent

claim 59, prior to amendment. Claim 59 remains allowable for at least the reason that it depends from allowable base claim 54, and none of the cited references, individually or as combined, disclose or suggest the claim 59 recited sifting antimicrobial agent through the perforated segment of access tubes.

New claims 60-67 do not add "new matter" to the application since each is fully supported by the specification as originally filed. Claims 60-67 are supported by the specification at, for example, paragraphs 19, 20, 26, 29, 31 and 32, and by the claims as originally filed. Claims 60-67 are allowable over the art of record for at least the reason that they depend from allowable base claim 24.

For the reasons discussed above, pending claims 1-24, 26-28, 41-44, 46-48 and 50-67 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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By: Alan D. Kirsch
Alan D. Kirsch
Attorney for Applicants
Reg. No. 33,720
P.O. Box 1625
Idaho Falls, Idaho 83415-3899
(208) 526-1371